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XXIII. *On the annual variations of some of the principal fixed Stars.* By J. POND, F.R.S. Astron. Royal.

Read June 16, 1825.

WHENEVER any difference of opinion exists on philosophical subjects depending on experiment or observation, it is much more useful simply to state facts, than to reason on them prematurely. Having this principle in view, I am induced to transmit to the Society the annexed small Table, which contains the annual variations of some of the fixed stars, as deduced both from Dr. BRINKLEY's observations and my own, and by which each may be compared with the annual variations determined by very distant observations, according to the more usual method. Of sixteen stars south of the zenith, observed at Dublin, it will be seen, by the table, that thirteen of them either indicate, or at least are not inconsistent with that irregularity which I have noticed under the name of southern deviation; of these thirteen, about half indicate rather a greater deviation than I have assigned to them, the other half deviate less. The three remaining stars, Castor,  $\alpha$  Aquilæ,  $\alpha$  Cygni, deviate in a contrary direction. The difference in  $\alpha$  Cygni is considerable, and not easily to be accounted for, as this star is one of those most frequently observed at each observatory, and is so near the zenith as not to be easily affected by the uncertainty of astronomical refraction.

I fear the examination of these tables will rather increase than diminish that tendency to scepticism which does and

indeed ought to exist, relative to the determination of such very small quantities by astronomical observation ; but I deem it peculiarly incumbent on any one, placed in the situation which I hold, not to be influenced by these considerations : on the contrary, the difficulty and perplexity of the subject should only act as an incentive to contrive more powerful methods of investigation.

Nothing has ever been farther from my intention, than to place this subject in a controversial point of view. It would be worse than useless so to do, since the difficulty will in the space of a very few years in all probability be satisfactorily explained.

		Dr. Brinkley, 1813.	Dr. Brinkley, 1819.	Annual Variation from Dublin Obs. of 1813 and 1819.	Annual Variation from Greenwich Obs. of 1813 and 1833.	Annual Variation from Greenwich Obs. of 1756 and 1813.
1	$\alpha$ Cassiopeiae.	34.29.22.59	34.27.23.47	— 19.85	19.70	19.85
2	Polaris.					
3	$\alpha$ Arietis.	67.25.36.76	67.23.53.25	— 17.25	17.22	17.40
4	$\alpha$ Ceti.					
5	$\alpha$ Persei.					
6	Aldebaran.	73.52.35.98	73.51.49.22	— 7.79	7.77	7.92
7	Capella.					
8	Rigel.					
9	$\beta$ Tauri.	61.33.44.22	61.33.21.76	— 3.74	3.72	3.80
10	$\alpha$ Orionis.	82.38. 9.23	82.38.15.94	— 1.12	1.15	1.36
11	Sirius.					
12	Castor.	57.42.47.54	57.43.29.94	+ 7.07	7.22	7.12
13	Procyon.	84.18.15.33	84.19. 8.42	+ 8.85	8.92	8.63
14	Pollux.	61.31.56.07	61.32.44.98	+ 8.15	8.04	8.02
15	$\alpha$ Hydræ.					
16	Regulus.	77. 7.23.06	77. 9. 7.45	+ 17.40	17.28	17.23
17	$\alpha$ Ursæ maj.					
18	$\beta$ Leonis.	74.22.56.44	74.24.57.91	+ 20.24	20.08	20.04
19	$\gamma$ Ursæ maj.	35.15.56.22	35.17.55.15	+ 19.82	19.95	19.98
20	Spica Virg.					
21	$\gamma$ Ursæ maj.	39.44.58.37	39.46.47.18	+ 18.13	18.16	18.15
22	Arcturus.	69.50.19.33	69.52.13.66	+ 19.05	19.01	18.97
23	$\beta$ Ursæ min.					
24	$\alpha$ Cor. Bor.	62.38.55.51	62.40.10.46	+ 12.49	12.51	12.45
25	$\alpha$ Serpentis.	82.58.38.81	82.59.49.73	+ 11.82	11.73	11.72
26	Antares.					
27	$\alpha$ Herculis.					
28	$\alpha$ Ophiuchi.	77.17.40.39	77.17.58.23	+ 3.31	3.16	3.08
29	$\gamma$ Draconis.	38.29. 3.70	38.29. 7.51	+ 0.635	0.69	0.67
30	$\alpha$ Lyrae.	51.23. 0.84	51.22.42.84	— 3.00	2.94	3.02
31	$\alpha$ Aquilæ.	81.36.59.85	81.36. 5.11	— 9.12	8.93	9.06
32	$\alpha$ Cygni.	45.22.58.30	45.21.42.30	— 12.65	12.47	12.63
33	$\alpha$ Cephei.	28.12.13.90	28.10.42.74	— 15.19	14.99	15.07
34	$\beta$ Cephei.	20.15.31.41	20.13.57.05	— 15.73	15.66	15.68
35	$\alpha$ Aquarii.	91.13.21.75	91.11.39.40	— 17.06	17.00	17.27
36	$\alpha$ Pegasi.					
37	$\alpha$ Andromed.					

The first and second columns of the above table are taken from two papers of Dr. BRINKLEY, the one printed in the Irish Transactions, the other in the Philosophical Transactions for 1821.